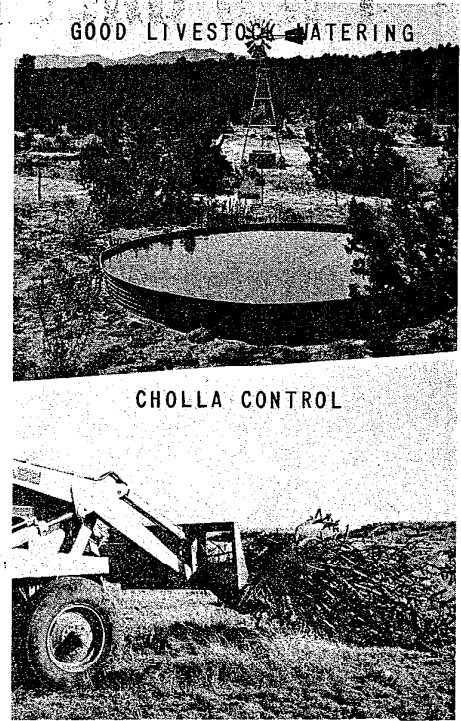
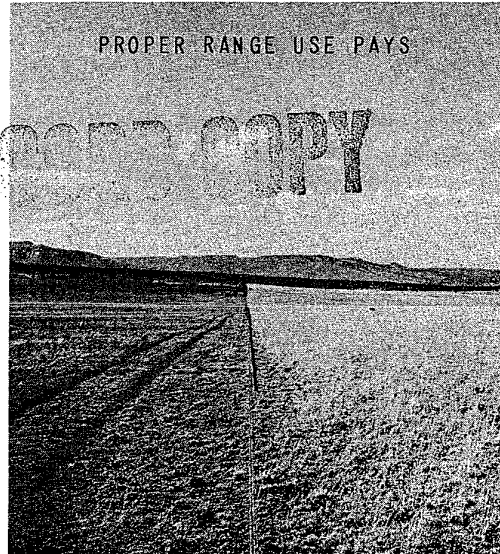
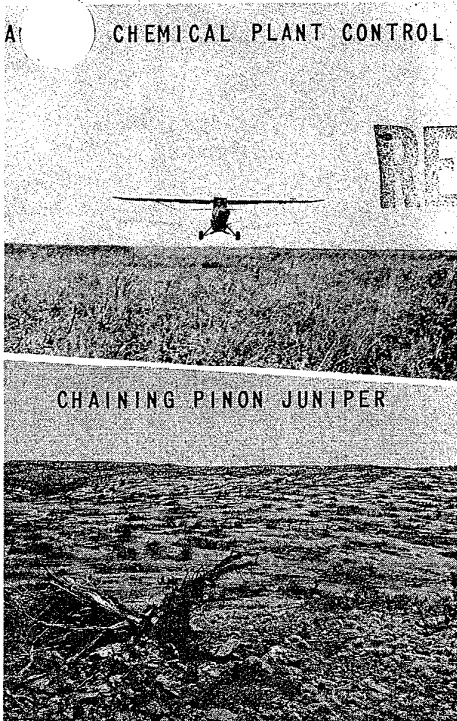


RANGE CONSERVATION - TECHNICAL NOTES



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NEW MEXICO

RANGE TECHNICAL NOTE No. 21

February 28, 1967

Subject: RANGE MANAGEMENT BEFORE AND AFTER BRUSH CONTROL (Part V)

The information in this Technical Note was developed at a range management workshop with Soil Conservation Service and University personnel contributing.

This information will serve as guidance, and must be adapted by the technician to specific local conditions.

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REVEGETATION OF RANGELAND IN CONJUNCTION WITH BRUSH CONTROL

Brush control is more than treating competitive woody plants. The neutralization of these brush plants is the first step in range recovery, but a complete program must include establishment of a productive stand of plants on the range for forage, and for soil and water conservation.

Treatments for controlling unwanted plants are broadly classed as chemical, mechanical, pyric, and biological. Improvement needs to be done prior to the brush control operation so the plan can be implemented with or following the control operation. A decision must be made whether to depend on the residual stand of desirable forage plants after application of the practices, the rate of range recovery desired, and the relative productivity of the site.

Some brush control treatments, especially mechanical and burning, can be very destructive of the entire plant cover. Chemical treatments usually selectively kill only the brushy plants, and burning as well as many mechanical treatments can be applied so they, too, are selective. On many brushy ranges most of the better forage plants remaining are found in the protection of the woody plant cover. The selectivity of the treatment determines the amount of residual forage stand remaining.

Natural revegetation after brush control is the use of forage plants remaining as a foundation for re-establishing a productive cover on a range unit. Essentially, natural revegetation permitted by the application of range and livestock management practices favors the increase and spread of this foundation stand. Natural revegetation should be considered if 10 percent or more of the plants present on the land at time of brush treatment are desirable forage plants, and the method of control will not result in destruction of the existing stand. Natural revegetation requires less immediate cash outlay than does artificial, but may require longer to reach a desired level of productivity. The most rapid changes occur with the combination of a good seed year followed by a season favorable for germination and plant growth.

Artificial revegetation is based on the mechanical dissemination of seed to establish desired forage plants. A successful seeding requires the use of good quality seed of adapted varieties, a weed-free and firm seedbed, proper planting procedures, and the management of the seeded stand until it is well established. A primary consideration in artificial revegetation is the choice of adapted varieties to be seeded. Seed should be of genetic and climatic origin known to be locally adapted.

There is no substitute for a seedbed which has been properly prepared. The soil should be tilled and free of competing plants in areas where seeding is to be done. The surface of the soil should be firm and free of clods to prevent grass seed from becoming too deeply buried to emerge.

The use of proper planting procedures will reduce the risk in obtaining a stand. Grass seeds usually are either drilled or broadcast on the land following brush control. Drilling is preferred where it can be used, but care should be taken in broadcasting to secure a uniform distribution of seed over the planted area. Rates of seeding should be set to secure not less than 20 pure live seed units per foot of drill row, or per square foot broadcast. The precise date of planting varies because of climatic variations over New Mexico. The warm season grasses usually planted in New Mexico should be seeded in early spring or summer, just before the normal season of rainfall.

Proper management of a seeded area will result in a more acceptable stand, and will promote the early development of a vigorous forage stand.

Root-plowing has been the most widespread brush control practice with seeding associated (Allison and Rechenthin, 1956; Ball, 1965; Boykin, 1960; Carter, 1958). Seeding success has been found to vary by site and by date of seeding. Boykin (1960) found that an acceptable stand varied from 32 to 65 percent, depending upon the site; Ball (1964) found that 24 to 88 percent of the seedings were successful in the Rio Grande Plain area, but on a wider range of sites. A higher proportion of seedings done in late winter and early spring produced stands than did seedings made at other times.

A major factor in the variation in stand obtained with seeding is the character of the soil surface following root-plowing. In some soils and under some soil moisture conditions, the surface is left quite cloddy, so the grass seeds are buried too deep to emerge. Modification or improvement of the seedbed aids to get a stand of grass in these cases.

Burning can be a selective method of brush control, but many fires are catastrophic. The use of fire on rangeland was common in the juniper types, but is seldom used now. Physically, the ash is a good seedbed if the seeds are planted before it settles. Generally, wholesale burning should not be practiced on shallow soils or steep slopes.

Less intensive treatments such as using a stinger, grubbing, and chopping may be followed by seeding. The seed may be applied to the soil disturbed during the brush control operation.